

Appln. No. 10/007,468
Amendment dated April 14, 2004
Reply to Office Action of January 14, 2004

Amendments to the Claims:

Please amend claims 1-19 as follows. The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended). A liquid crystal display device comprising:

a liquid crystal display panel having a plurality of signal lines, a plurality of scanning lines, and a plurality of display pixels arrayed in a matrix and provided respectively near cross-points between the signal lines and the scanning lines through switching elements; and

a driver which supplies the plurality of signal lines with a display signal in a field period, and which ~~scans~~ supplies the plurality of scanning lines with a scanning signal, to apply the display signal to the plurality of display pixels, wherein

the driver ~~applies~~ includes means which supplies a predetermined initialization signal voltage to the ~~display pixels~~ signal line and supplies a first gate pulse as the scanning signal to the scanning line, thereby applying the initialization signal to the display pixel, and thereafter ~~applies~~ supplies the

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display signal to the signal lines and supplies a second gate
pulse as the scanning signal to the scanning line, thereby
applying the display signal to the display pixel, in at least one
20 signal application period set within the field period.

Claim 2 (Currently Amended). The liquid crystal display
device according to claim 1, wherein

the liquid crystal display panel includes a plurality of
pixel electrodes arrayed in a matrix through the switching
5 elements, and common electrodes opposed to the pixel electrodes,
and

the display pixels comprise the pixel electrodes, the common
electrodes, and liquid crystal sandwiched between the pixel
electrodes and the common electrodes.

Claim 3 (Currently Amended). The liquid crystal display
device according to claim 1, wherein each of the switching
elements of the liquid crystal display panel includes a thin film
transistor.

Claim 4 (Currently Amended). The ~~apparatus~~ liquid crystal
display device according to claim 1, wherein

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the driver applies the initialization signal voltage to the display pixels and thereafter applies the display signal after a
5 predetermined hold time, in the signal application period in the field period, and

the hold time is set to a time equal to or longer than a voltage-write response time of the display pixels.

Claim 5 (Currently Amended). The liquid crystal display device according to claim 1, wherein

the initialization signal voltage in the driver has a value equal to or higher than a maximum voltage value of the display
5 signal.

Claim 6 (Currently Amended). The liquid crystal display device according to claim 1, wherein

the driver applies the initialization signal voltage and the display signal to the display pixels connected to the scanning
5 lines of the liquid crystal display panel, at a predetermined time interval, sequentially for every one of the scanning lines, in the signal application period in the field period, and

the time interval is set to a value at which timings of applying the initialization signal voltage and the display signal

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- 10 to every one of the display pixels connected to each of the scanning lines do not overlap with each other.

Claim 7 (Currently Amended). The liquid crystal display device according to claim 1, wherein

- application timing is set such that the driver applies the initialization signal voltage simultaneously to all of the display pixels of the liquid crystal display panel, and thereafter applies the display signal to the display pixels connected to the scanning lines of the liquid crystal display panel, at a predetermined time interval, sequentially for every one of the scanning lines, in the signal application period in the field period.

Claim 8 (Currently Amended). The liquid crystal display device according to claim 1, wherein

the driver provides three signal application periods in one field period.

Claim 9 (Currently Amended). The liquid crystal display device according to claim 8, wherein

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the display signal comprises first, second, and third color component signals, and

5 the driver applies the initialization signal voltage and thereafter applies any one of the first, second, and third color component signals, to the display pixels connected to the scanning lines of the liquid crystal display panel, sequentially for every one of the scanning lines, in each of the signal
10 application periods of the field period.

Claim 10 (Currently Amended). The liquid crystal display device according to claim 9, further comprising an illumination light source capable of controlling light emission color,

the illumination light source being controlled to have light
5 emission color corresponding to any one of the first, second, and third color component signals that is applied by the driver in each ~~of the~~ signal application period.

Claim 11 (Currently Amended). The liquid crystal display device according to claim 8, wherein of the display signal, the first color component signal is a red component signal, the second color component signal is a green component signal, and
5 the ~~first~~ third color component signal is a blue component signal.

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Claim 12 (Currently Amended). A drive control method for a liquid crystal display device which has a plurality of signal lines, a plurality of scanning lines, and a plurality of display pixels arrayed in a matrix and provided respectively near

5 cross-points between the signal lines and the scanning lines through switching elements, and which supplies the plurality of signal lines with a display signal in a field period and ~~scans~~ supplies scanning signals to the plurality of scanning lines, to apply the display signal to the plurality of display pixels,
10 comprising:

providing at least one signal application period in the field period;

applying ~~a predetermined~~ an initialization signal ~~voltage~~ to the display ~~pixels~~ pixel, by supplying the initialization in the
15 signal voltage to the signal line and supplying a first gate pulse as the scanning signal to the scanning line application
period; and

applying the display signal to the display pixels by
supplying the display signal to the signal line and supplying a
20 second gate pulse as the scanning signal to the scanning line
after completion of the applying of the initialization signal voltage in the signal application period.

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Claim 13 (Currently Amended). The drive control method according to claim 12, further comprising providing ~~of~~ a predetermined voltage hold time after completion of ~~the~~ applying of the initialization signal voltage to the display pixels,

5 wherein

~~the~~ applying of the display signal includes applying the display signal to the display pixels after the voltage hold time has passed after ~~the~~ applying of the initialization signal voltage, and

10 the hold time is set to a time equal to or ~~longer~~ greater than a voltage-write response time of the display pixels.

Claim 14 (Currently Amended). The drive control method according to claim 12, wherein

the initialization signal voltage has a value equal to or higher than a maximum voltage value of the
5 display signal.

Claim 15 (Currently Amended). The drive control method according to claim 12, wherein ~~the~~ applying of the initialization signal voltage includes applying the initialization signal

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voltage to the display pixels connected to the scanning lines,
5 sequentially for every one of the scanning lines,

~~the~~ applying of the display signal includes applying the
display signal to the display pixels connected to the scanning
lines, sequentially for every one of the scanning lines, and

application timings of applying the initialization signal
10 voltage and the display signal for every one of the scanning line
are set so as not to overlap with each other.

Claim 16 (Currently Amended). The drive control method
according to claim 12, wherein

~~the~~ applying of the initialization signal voltage includes
applying the initialization signal voltage simultaneously to all
5 ~~the~~ display pixels connected to the scanning lines.

Claim 17 (Currently Amended). The drive control method
according to claim 12, wherein

~~the~~ providing of the signal application period in the field
period includes providing three signal application periods in one
5 field period.

Claim 18 (Currently Amended). The drive control method
according to claim 17, wherein

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the display signal comprises first, second, and third color component signals, and

5 ~~the~~ applying of the initialization signal voltage includes applying the initialization signal voltage simultaneously to the plurality of display pixels connected to the scanning lines, in each of the signal application periods, and

10 ~~the~~ applying of the display signal includes applying any of the first, second, and third color component signals, to the display pixels connected to the scanning lines, sequentially for every one of the scanning lines, in each of the signal application periods.

Claim 19 (Currently Amended). The drive control method according to claim 18, further comprising controlling light emission color of an illumination light source, wherein

5 ~~the~~ controlling of the light emission color includes controlling the light emission color of the light source so as to correspond to any of the first, second, and third color component signals that is applied to the display pixels in ~~the~~ applying of the display signal.